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An Address

Delivered on the Opening of
the New Engineering Buildings
of the University of Edinburgh
16th October, 1906

By

ANDREW CARNEGIE



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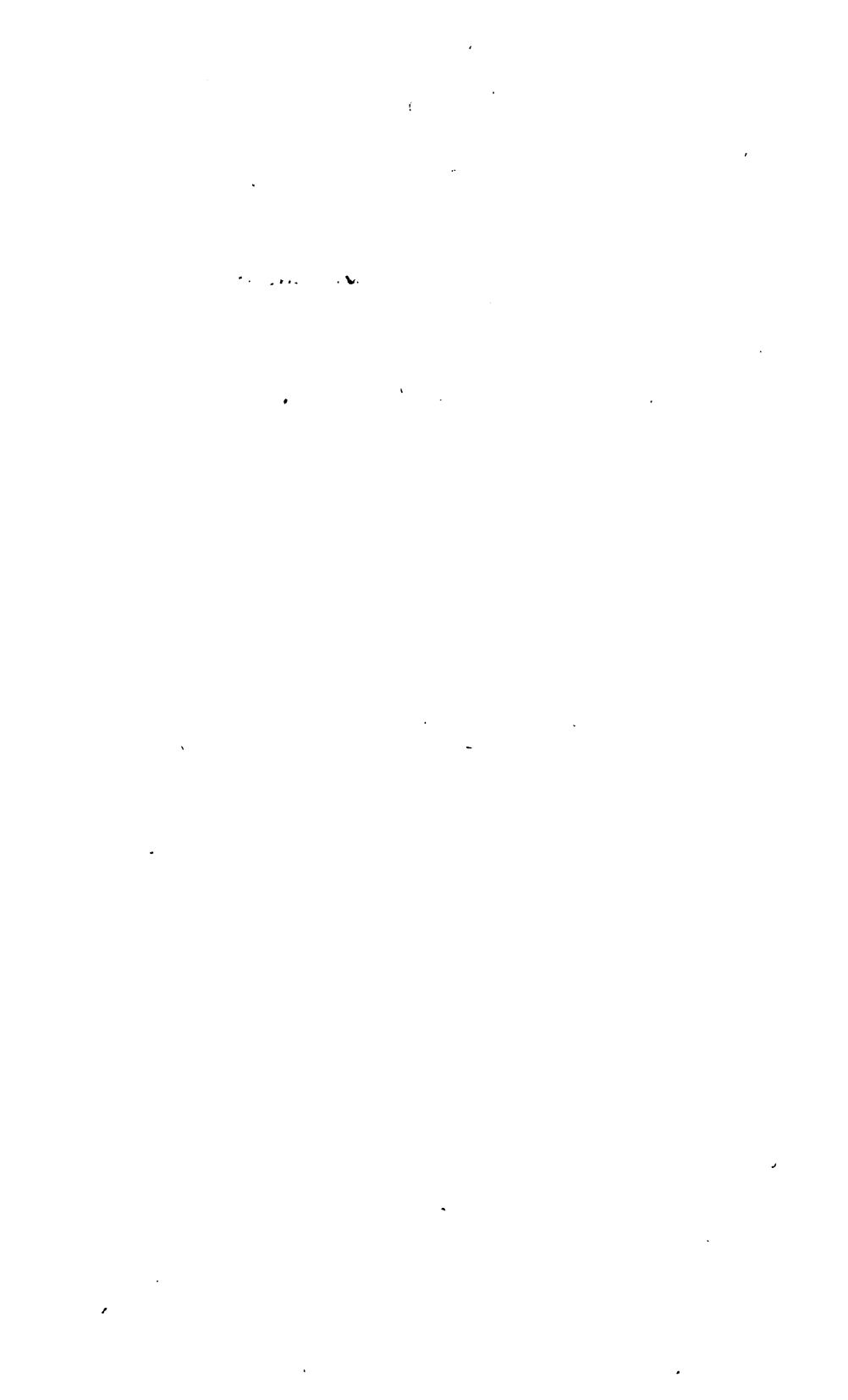
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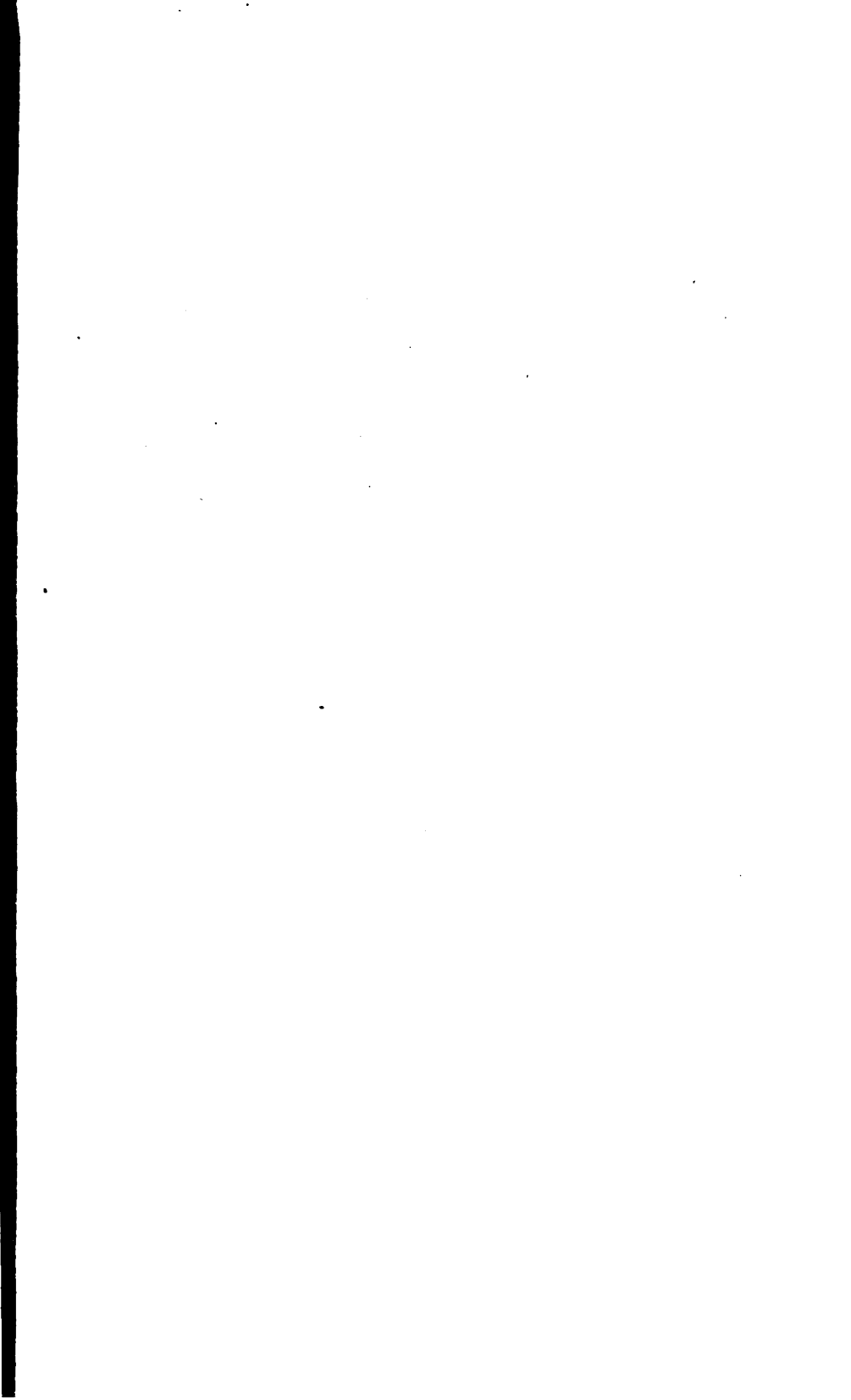
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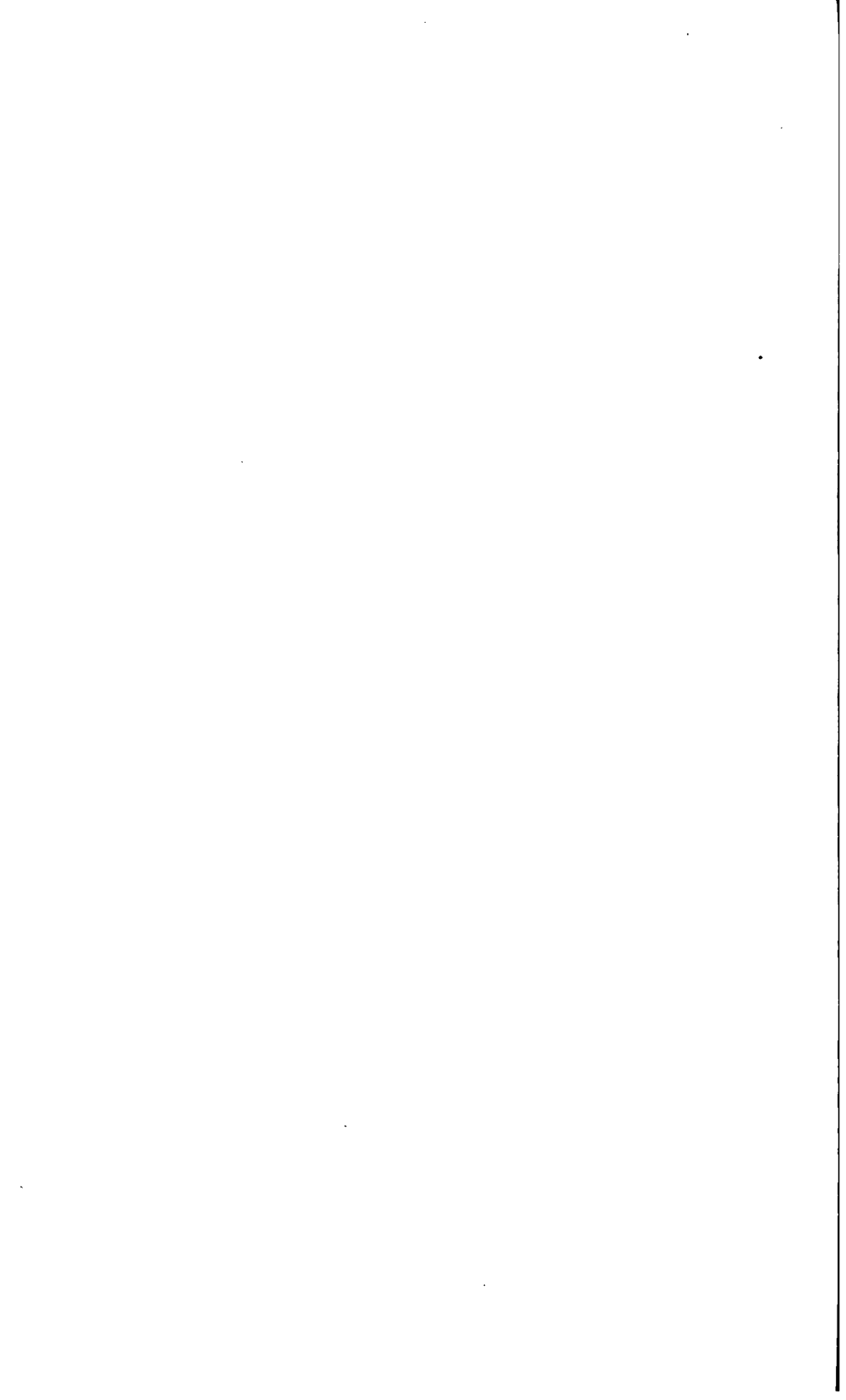
HEINRICH LAMMASCH

Received May 25, 1922.









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MY first words as an Honorary Graduate of the University of Edinburgh must be of thanks for the great honor conferred and of congratulation upon the new acquisitions which she has secured, intended to increase the facilities and hence extend the power of the youngest adopted child of universities, Applied Science.

Like most good things, the University is a growth, and slowly indeed has it developed. Planted in Italy in the ninth century, by the tenth, Salerno had become famous for two subjects, Medicine and Philosophy. Other Universities followed, but no sign of Ecclesiasticism appears until early in the twelfth century, when the Catholic Church demanded for her canon law equal recognition with the civil law, and the University of Bologna became the centre of the union between these two branches. Henceforth a fierce struggle ensued between the Realists and the Nominalists which continued for centuries. Metaphysical theories arose giving rise to endless controversies turning upon questions the scientific investigation of which was impossible. Paris was dominated by the Realists, while at Heidelberg the Nominalists expelled them, and it was much the same at Vienna and Erfurt.

For centuries the Universities of Europe wasted

their powers upon these speculative subjects, incapable of settlement, and which even if settled could have had little or no beneficial influence upon human life. They argued in a circle. Milton did not give his spirits in *Paradise Lost* a task less eternal or more insoluble when he set them to meditate upon and discuss,

“ Fixt fate,
Free will, fore-knowledge absolute,
And found no end, in wandering mazes lost.”

Many of you are familiar with the curious questions upon which the learned of old wasted their time. Faint traces of such or similar subjects, sometimes obtrude themselves, even to-day. Two at least of our foremost men take their recreation from high affairs of state, searching for Foundations which are never found, or for the Pathway to Reality, only to settle to the entire satisfaction of readers that about that pathway there is no “Reality” whatever. The well-known query will force itself upon us, “What is Metaphysics”? and the answer comes, “Metaphysics is when ae man tries to tell ither men a’ about a subject he disna ken onything aboot himsel’.” Fortunately these two statesmen are in constant demand by their country, in office or in opposition, which prevents serious consequences.

It remained for Italy, in the fourteenth century,

to bring order out of chaos and at last to establish peace in Europe among the warring Universities. She decided that such speculative controversies as had engrossed and divided them could never be satisfactorily ended, and substituted rhetoric for logic, under which they had arisen. It was thru this action that the expounders of the new learning in the fifteenth century were enabled to effect a revolution in academic studies, constituting a new era in University education, Scholasticism being soon dethroned. The reputation of Italian Professors became famous in other lands. The call to a chair in Padua, Bologna or Pisa was considered the blue ribband of that day. Never had Professors stood so high in public estimation, and not a few of the most illustrious were members of the proudest nobility of the land. It is well that in Scotland to-day Principals and Professors of Universities rank equal with any in Europe, not excepting Germany. A good omen for any country that the teacher, whether of elementary school or of University, stands equal to or perhaps higher than the corresponding class elsewhere. It is a significant indication of general intelligence and a proud record for Scotland.

The olden Universities fortunately found it essential to vary their studies a little, only sufficient perhaps

to prevent boredom ; hence they could not altogether dispense with the ancient text-books, and translations of certain treatises of Aristotle and the works of Boetius continued to be studied. So some gleams of pagan learning remained, and the thought and literature of classic antiquity were thus partially preserved. We may be sure this department ranked low indeed, however, compared with the Theological, probably as low as Science has ranked until our own times as compared with the study of Greek and Latin.

After a long interval there appears the Catholic Church demanding for its canon law equal authority with the civil law, and Bologna became the centre of Union, the Church triumphed and Clericalism was enthroned and reigned for many long years, during which nothing was known of Milton's bold challenge, "Let truth and error grapple." Investigation was restricted by the doctrine that "Reason was under authority." Conclusions were determined before investigation began. The Church was afraid to learn the whole truth, and said to it, "Thus far shalt thou come and no further." In those days good religious people did not know that truth was one harmonious whole ; they had no conception of our present knowledge that it is impossible that one truth can contradict another ; only what is false can war against what is

true. So real knowledge in most of its branches was for a long period suppressed. Ecclesiasticism ruled as a tyrant, but truth rolled not back when Rome gave command. We have travelled far from this condition, and now all forms of truth are sought and accepted as part of one indivisible body whose parts act and react upon each other everywhere tending to harmony. Old ideas have been dethroned in our Universities, and men now realise that it is the truth that makes us free. Clericalism was indeed dethroned, but only to be succeeded by another tyrant, the Ancient Classics. These usurped the throne and for some centuries have held sway. Traces of their rule are still seen. Even in our own day the two foremost Universities in England refuse their degrees to the candidate, however eminent, if he has not studied Greek.

A famous Greek scholar and Professor of Ancient History recently took occasion to express publicly his intense satisfaction that the Medical College of St. Andrews University was in Dundee, eleven miles distant, and not within the sacred precincts of St. Andrews itself. It was difficult for one from across the Atlantic to realize that there existed to-day in Britain a learned man who felt that the study of Medicine for the alleviation of human suffering in the

same institution would be derogatory to the study of any other subject under the sun, least of all that of Greek and Ancient History, and Theology not excepted, for surely the highest worship of God is service to man, and this is the sole aim of the Medical profession.

An editorial in the "Telegraph" upon the Classics (September 28th) says that "If the Arts some years ago showed an illiberal jealousy and a foolish contempt of Science, it is not for Science to show the same illiberality towards the Arts." This is well. Let us hope that Science will return good for evil, and pardon even the Greek Professor referred to as one who has lived, not in the living present, but in the dead past out of touch with his age. When I have seen the Professors in America who teach the vast majority of the students things of to-day, each the recipient of the admiration and the gratitude of their scholars, and then met the venerable old Professor of Greek, with only a handful of students being taught things of the past, I have sometimes feared that the classic Professor might soon be in danger of being considered somewhat out of the running by the great body of young and somewhat thoughtless students, and that it might be necessary to address them some day in the spirit of

the "Telegraph's" editorial. It goes without saying that in the young students' eyes he cannot rank in importance with the teacher of modern studies, but small as his charge may now be, it is always to be remembered he is of rank with other teachers of men, that knowlege is a Republic which enforces equality: besides we owe an unpayable debt to his predecessors, the pioneer Professors of Greek who dug rich treasures from the then prolific mine.

There was the best of all reasons why the ancient classics should be embraced by the old Universities. There were then no modern classics. To-day we have no such excuse to urge for the dominance of ancient classics, when we have, according to high authorities, a classic literature of our own far exceeding in value that of Greece and Rome. Russell Lowell has stated that if we put the ancient classics in one scale and Shakespeare in the other the former would kick the beam. Universities in America and Canada are paying more and more attention to our own language and less and less to Latin and Greek. Not that the latter are excluded, but that they no longer outrank other branches of study.

Herbert Spencer has left us his opinion, that the fact that dead tongues continued to absorb the chief time and attention of our Universities, will be con-

sidered by our successors one of the aberrations of humanity.

Thruout America the Scientific Departments have made enormous strides in the Universities. The Scientific Schools of M'Gill, Harvard, Yale, Columbia, Cornell and others are prominent features, in some cases promising to be the largest of all. Their doors are open to the new forces of the day, and they have at their heads a body of remarkably able and zealous men, who not only keep the Universities foremost as progressive educative agencies but whose potent voices are heard upon public questions as leaders of the higher ideals in national affairs.

Much can also be said of the corresponding progress in Scotland. They are not schools for a class, but for the people, stirring hives of Democracy. We have to-day everywhere the evidence of strong, healthy, growing life in the modern studies of your Universities. St. Andrews has just erected a new Chemical Laboratory for Research; Dundee is about to erect such schools as we are to-day to open; we all know where Glasgow stands in modern branches of education; Aberdeen has just been supplied with new buildings efficiently equipped for the study of Science and Medicine. No less than eleven new chambers have been assigned to modern studies.

The University of London has recently separated Economics and Engineering from Arts and establish separate faculties. It is also announced that owing to the unrivalled facilities afforded by the Metropolis, they have to be prepared for the advent of new schools of practical study or research.

In all the new Universities of Liverpool, Manchester, Birmingham, Leeds, and Sheffield, Modern Studies are to be paramount.

Harvard University has just been left Eight Hundred Thousand Pounds for an Institute of Technology, but, one of the foremost schools of Technology being already established in Boston, she has proposed union with that, and to erect much needed new buildings as part of the University. McGill University, Montreal, has just had the Agricultural College built by Sir Wm. McDonald at a cost of Six Hundred Thousand Pounds handed over to her.

Thus the Millions are now being devoted to Science and Practical studies, Theology and the Classics being in the opinion of the donors already amply provided for.

This betokens a steady march forward from the stationary policy of the past; not that it is desirable to exclude any of the former University courses, but that there should be added courses needed to guide

and advance the new knowledge which is creating new conditions in our world. While the classical and theological fields are necessarily restricted because already thoroughly explored, science is just beginning to unfold her greatest wonders in our own day. Time was when the education fit for a gentleman was very narrow indeed. In our day one ignorant of the new knowledge, which is mainly scientific or the result of scientific methods, cannot be accounted such. He remains an ignorant gentleman if he has mastered little else than Latin and Greek.

Years ago I heard discuss the question of the successor to your late lamented Principal. Your present Principal's name was mentioned. There was general concurrence that he was the man, but fears were expressed that not being a classical scholar he might not be favored by the majority of the faculty. This proved to be a mistake, which shows how satisfactory in Edinburgh are the relations between all branches of knowledge. Scotland seems as far and as happily advanced beyond England in University, as she is in elementary public school, education. But she may expect the new Universities of the five principal English cities to approach perhaps even nearer to the similar American institutions in character than hers do, for their educational atmosphere and aims

are very different indeed from those of Oxford and Cambridge and very similar to those of American cities. These will be Modern Universities, fully equipped for the work of to-day.

We have a wise man in Lord Strathcona, one who has had official experience in Universities both in Canada and Britain. In his speech at Aberdeen he said, "I may be allowed to record my conviction that Universities of the other side of the Atlantic enjoy a considerable advantage in the ease and readiness with which, unhampered as they are by any venerable traditions, they can adapt themselves to the practical needs of the various constituencies which they seek to serve. They found out long ago that law, and medicine, and theology are not the only legitimate fruits of academic study, and in their faculties of applied science they are training their young men to do work that is loudly called for. They have never accepted the view that Universities must necessarily be institutions cloistered and apart from the main current of public life and service. On the contrary, they make a training for citizenship and for public usefulness, the basis and foundation of their educational activity. The reward they have is that (fully as much as we do here) they find their alumni in every walk of life—not in the 'learned

professions' only, and some of the most notable benefactions which the American Universities have lately received come from men whose desire it is to connect them still more closely with practical work."

These words may be commended to your serious attention. It is gratifying to find that the Scottish Universities are moving in the direction indicated. Great as has been Scotland's contributions to the list of eminent and successful men in the past, her improved facilities are bound greatly to widen the field to which she will in the future even more largely contribute.

There is another quotation I should like to make from his Lordship's address :—

"The Scottish people are more interested now than ever before in all the problems that are connected with the management of their national Universities. They recognize that each of these Universities has its own mission to fulfil, a mission which takes on a more or less distinctive character according to the different circumstances of the localities which each is seeking to serve. Anything that tends to hamper them in the fulfilment of this mission, anything that clogs and retards their individual development, should be resolutely swept away. For example, the ordinance which practically prohibits one University from moving

in certain matters unless it can get the other three to move with it (a provision which has lately excited a considerable amount of public discussion), might perhaps now be reconsidered and revised. It seems to belong to the numerous category of things that were beneficial in their origin and at the time of their institution, but the necessity for which after a time passes away."

This seems the quintessence of good common sense. His Lordship, however, seems, in closing, to qualify, and thinks it would hardly do to allow each of the four Scottish Universities to become simply a law to itself, and that there must be unity. From my experience of American Universities, I am led to the contrary opinion. The best that could happen, judging from American results, is that each University in matters Educational should become a law unto itself, develop its own life, and fulfil its own mission in its own way. Freedom is good not only in our political institutions. Freedom is good in all departments and, so far from seeking uniformity, it is believed the best results will be found in diversity. No great institution and no great thing, nor any great man, is truly great without differing from others. There must be individualism. Our Universities in America, which live in perfect free-

dom, have become celebrated in one domain or another. And to-day, even in Scotland, hampered as they may be in their freedom, we see distinctive properties developing.

The progress of scientific studies in British Universities, considerable as it has recently been, yet has not kept pace with the startling progress of science itself and with the wonderful discoveries which threaten to revolutionise human conceptions. The discovery of Argon, Becquerel's rays, Roentgen rays, Uranium, and finally Radium threatens to relegate the old atomic theory itself to the list of discarded "creeds outworn," except that science has no creeds. She has only theories and beliefs, based upon phenomena, but all held lightly, subject to progressive discoveries that may be revealed in her unceasing search for the truth. Science has no preconceived dogmas; she has but one end, the pursuit of truth.

It was long claimed for the classics that they alone appealed to the imagination, while dry, prosaic science was incapable of doing so. This is a grievous mistake. The recent discoveries that have startled the world are sublime, and appeal with intense force to the imaginative faculties of man. The scientific man of to-day lives in an atmosphere of wonder,

arousing all his higher powers and compelling reverence. At each succeeding revelation he stands "as some watcher of the skies when a new comet swims into his ken."

I venture to recommend to you a book just issued, called "The New Knowledge," by Professor Duncan of Canonsburg College, a few miles from Pittsburg, because, as it swept me along, I felt as if indeed "commercing with the skies." The "Athenaeum" hails it as the best book of its kind ever publisht. The "Spectator" is scarcely less laudatory. I sent several copies to friends, one to a notable Presbyterian minister in New York, who has been alarming some of his congregation by dubious explanations of events and of old doctrines, which trouble people now-a-days and compel liberalizing legislation giving the right of individual interpretation. He wrote he had been deprived of a night's sleep—it was three o'clock in the morning before he knew it; that fascinating, marvellous book had entranced him. For the first time he had apparently realized that dead, inert matter was alive and electric, and that Tyndall's celebrated conviction is probably to be fulfilled, that man is finally to find the potency of all things in matter. But what if he does? It will not be dead matter,

but matter with a soul in it, making our knowledge more mysterious than our ignorance was. From what we already know of Radium, in contemplating the universe we are lifted into regions higher than ever dreamt of, meeting marvels beyond imagination. The stern facts described in this book, which is only a resumé and simple explanation of recent discoveries, are stranger than the strangest fiction ever produced.

The effect of science in this realm, so far from deadening, excites the imagination, giving it richer matter to feed upon, unknown before. We seem to be on the threshold of revolutionary knowledge. The old branches of learning in our Universities may well welcome the newer branch, not only as the foundation of material progress, but also as one of the very highest agencies in the imaginative domain. It is the scientist

“Who can extract each particular virtue from the sun
And teach dull nature what her forces are.”

The new knowledge deserves what your Chancellor, Mr Balfour, now presiding, said in his recent address to the British Association:—“It excites feelings of the most acute intellectual gratification. The satisfaction it gives is almost aesthetic in its intensity and quality. We feel the same sort of

pleasurable shock as when from the crest of some melancholy pass we first see far below us the sudden glory of plain, river, and mountain." We thank your Chancellor for these words so true.

This mighty force of our day, Science, has hitherto been the Cinderella of the sisterhood of knowledge, and you know how Cinderella was treated by her haughty sisters. The Prince has appeared at last and taken her by the hand, and it is now the turn of the elder sisters to greet the once neglected Princess. She will justify the millions which are now being showered upon her in the most progressive countries.

The ceremony of to-day bears testimony to the growing power of Science. Edinburgh University's prominence as a teacher of one of the noblest of all professions, perhaps the one in which those who practise it devote gratuitously more of their time and attention than those of any other, is not likely to be lost. On the contrary, all evidence to-day leads to the opposite conclusion. She is to remain famous for her Medical School, and is also destined to increase her reputation as a scientific instructor thru the possession of the increased facilities now provided. The Physical Laboratory and Engineering School which, with the cordial co-operation of the

Municipal authorities, have been so ably secured by the Principal and the University Court, are the necessary tools which will enable her to extend her work in these important branches of knowledge. They mark an epoch in her long career, and are to testify to future generations that the officials in charge of her work in the beginning of the twentieth century were alive to the duty of keeping the University of Edinburgh abreast of the new knowledge, of widening and enlarging the field of her activities, and of welcoming the development of the scientific and so-called practical courses, thus keeping her, true to her high mission, in the front rank in all branches.

I heartily congratulate the University of Edinburgh upon to-day's acquisitions, from which I hope are to come fit successors of Faraday, Lockyer, Becquerel, Currie, Rutherford, Rayleigh, Ramsay, Mandelieff, Kelvin, Tait and others, to give her such fame in Science as the names of Hume, Carlyle, Dugald Stewart, Hamilton, Chalmers, Simpson and others have already conferred upon her in other fields of knowledge.

I now declare these buildings open.





FOUR ALLEGED OBSTACLES TO INTERNATIONAL PEACE,
AND ANSWERS THERETO BY ANDREW
CARNEGIE, PRESIDENT NEW YORK PEACE
CONGRESS, APRIL 1907.

"Our Peace Congress has brought four objections clearly before us.

"First—Nations cannot submit all questions to arbitration.

"Answer—Six of them have recently done so by treaty—Denmark and the Netherlands, Chili and Argentina, Norway and Sweden.

"(Note.—Since Norway has just secured independence, the treaty provides that its integrity shall not be questioned, but whether it is or is not affected in any dispute is to be decided by the Hague Conference.)

"So much for the claim that nations cannot submit all questions. They have done it.

"Second—Justice is higher than peace.

"Answer—The first principle of natural justice forbids men to be judges when they are parties to the issue. All law rests upon this throughout the civilized world. Were a judge known to sit upon a case in which he was secretly interested, he would be dishonoured and expelled from his high office. If any individual refuses to submit his dispute with a neighbor to disinterested parties (arbitrators or judges) and insists upon being his own judge, he violates the first principles of justice. If he resorts to force in defense of his right to judge, he is dishonoured as a breaker of the law. Thus peace with justice is secured through arbitration, either by court or by tribunal, never by one of the parties sitting as judge in his own cause.

"Nations being only aggregates of individuals, they will not reach justice in their judgments until the same rule holds good, viz : that they, like individuals, shall not sit as judges in their own cause. What is unjust for individuals is unjust for nations. Justice is justice, unchangeable, and should hold universal sway over all men and over all nations.

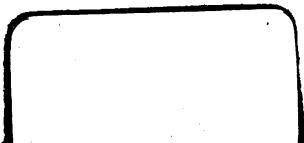
"Third—It is neither peace nor justice, but righteousness that exalteth a nation.

"Answer.—Righteousness is simply doing what is right. What is just is always right ; what is unjust, always wrong. It being the first principle of justice that men shall not be judges in their own cause, to refuse to submit to judge or arbitrator is unjust, hence not right, for the essence of righteousness is justice. Therefore, men who place justice or righteousness above peace practically proclaim, as it appears to me, that they will commit injustice and discard righteousness by constituting themselves sole judges of their own cause in violation of law, justice and right.

"Civilized man has reached the conclusion that he meets the claims of justice and of right only by upholding the present reign of law. Our pressing duty is to extend its benignant reign to combinations of men, called nations. What is right for all individuals must be right for the nation. This union of law and justice, insuring peace and good will among men through disinterested tribunals, is the ' righteousness which exalteth a nation.' The demand that interested parties shall sit in judgment is the self-righteousness that degrades a nation."

"Fourth—Upon the governors of every country falls the heavy duty of preventing it from ever being dishonored.

"Answer—If a country ever be dishonored it must be by its governors themselves, for no nation, nor all nations combined, can dishonor another nation. No nation ever did and no man ever dishonored another since history began. All honor's wounds are self-inflicted."

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